WHAT IS CLAIMED IS:

1. A method of communicating data between a base station having a plurality of antennas and at least one mobile terminal, the method comprising the steps of:

transmitting from the base station, derived versions of a midamble signal to each antenna within the plurality of antennas; and

providing a distinct delay associated with each derived version of the midamble signal and its respective antenna.

2. The method according to claim 1, wherein each derived version of the midamble signal is the midamble signal itself.

3. The method according to claim 1, wherein at least one derived version of the midamble is formed by scaling the amplitude of the midamble signal.

4. The method according to claim 1, wherein at least one derived version of the midamble is formed by shifting the phase of the midamble signal.

5. The method according to claim 1, wherein at least one derived version of the midamble is formed by scaling the amplitude and shifting the phase of the midamble signal.

6. The method according to claim 1 further comprising the step of altering the distinct delay associated with a derived version of the midamble signal and its respective antenna if and when an estimated path profile associated with the specific midamble signal changes from a prior estimated path profile.

7. The method according to claim 1 further comprising the step of receiving a base station generated distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a joint detector.

8. The method according to claim 1 further comprising the step of receiving a base station generated distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a zero-forcing block linear equalizer.

9. The method according to claim 1 further comprising the step of receiving a base station generated distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a zero-forcing block linear equalizer in association with decision feedback.

10. The method according to claim 1 further comprising the step of receiving a base station generated distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a minimum-mean-square equalizer.

11. The method according to claim 1 further comprising the step of receiving a base station generated distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a minimum-mean-square equalizer associated with decision feedback.

12. The method according to claim 1 wherein the derived versions of a midamble signal transmitted to each antenna are associated with a code division multiple access data signal.

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13. A method for communicating data between a base station having a plurality of antennas and at least one mobile terminal, the method comprising the steps of:

receiving at the base station, a time division duplex mode uplink signal from each mobile terminal in communication with the base station and estimating a path profile associated with each received uplink signal;

transmitting from the base station, a time division duplex signal to each antenna within the plurality of antennas; and

providing a distinct delay associated with each time division duplex signal and its respective antenna.

14. The method according to claim 13 further comprising the step of altering the distinct delay associated with a specific time division duplex signal and its respective antenna if and when the estimated path profile associated with the specific time division duplex signal changes from its prior estimated path profile.

15. The method according to claim 13 further comprising the step of receiving a distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a joint detector.

16. The method according to claim 13 further comprising the step of receiving a distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a zero-forcing block linear equalizer.

17. The method according to claim 13 further comprising the step of receiving a distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a zero-forcing block linear equalizer associated with decision feedback.

18. The method according to claim 13 further comprising the step of receiving a distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a minimum mean-square-error equalizer.

19. The method according to claim 13 further comprising the step of receiving a distinct delayed time division duplex signal at a respective mobile terminal and demodulating the distinct delayed time division duplex signal via a minimum mean-square-error equalizer associated with decision feedback.

20. The method according to claim 13 wherein the step of receiving at the base station, a time division duplex mode uplink signal from each mobile terminal in communication with the base station and estimating a path profile associated with each received uplink signal comprises the step of receiving a time division duplex code division multiple access data signal.

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~~21. A time division duplex communication system comprising:~~

~~a base station having a plurality of spaced apart antennas;~~

~~signal distribution means for coupling time division duplex communication signals between the base station and the plurality of spaced apart antennas; and~~

~~delay means operatively coupled to the antennas and the signal distribution means for providing a distinct delay in each of the time division duplex communication signals coupled between the base station and the plurality of spaced apart antennas.~~

22. The time division duplex communication system according to claim 21 further comprising at least one mobile terminal having a joint detector for receiving and demodulating a delayed time division duplex communication signal received from the base station.

23. The time division duplex communication system according to claim 21 further comprising at least one mobile terminal having a zero-forcing block linear equalizer configured to demodulate a delayed time division duplex communication signal received from the base station.

24. The time division duplex communication system according to claim 21 further comprising at least one mobile terminal having a zero-forcing block linear equalizer having decision feedback capability and configured to demodulate a delayed time division duplex communication signal received from the base station.

25. The time division duplex communication system according to claim 21 further comprising at least one mobile terminal having a minimum-mean-square error equalizer configured to demodulate a delayed time division duplex communication signal received from the base station.

26. The time division duplex communication system according to claim 21 further comprising at least one mobile terminal having a minimum-mean-square error equalizer having decision feedback capability and configured to demodulate a delayed time division duplex communication signal received from the base station.

27. The time division duplex communication system according to claim 21 wherein each time division duplex communication signal is associated with a code division multiple access data signal.

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28. A data communication system comprising:

a base station having a plurality of spaced apart antennas;

at least one mobile terminal in communication with the base station; and

means for providing a distinct delay associated with each antenna such that a time division duplex communication signal coupled between the base station and the plurality of spaced apart antennas can be demodulated within the at least one mobile terminal.

29. The data communication system according to claim 28 wherein the at least one mobile terminal comprises a joint detector.

30. The data communication system according to claim 28 wherein the at least one mobile terminal comprises a zero-forcing block linear equalizer.

31. The data communication system according to claim 28 wherein the at least one mobile terminal comprises a zero-forcing block linear equalizer having decision feedback capability.

32. The data communication system according to claim 28 wherein the at least one mobile terminal comprises a minimum-mean-square error equalizer.

33. The data communication system according to claim 28 wherein the at least one mobile terminal comprises a minimum-mean-square error equalizer having decision feedback capability.

34. The data communication system according to claim 28 wherein the means for providing a distinct delay is capable of providing a distinct delay associated with each antenna such that a code division multiple access communication signal coupled between the base station and the plurality of spaced apart antennas can be demodulated within the at least one mobile terminal.

35. A data communication system comprising:

a base station having a plurality of spaced apart antennas;

means for transmitting from the base station, derived versions of a midamble signal to each antenna within the plurality of spaced apart antennas; and

means for providing a distinct delay associated with each derived version of the midamble signal and its respective antenna within the plurality of spaced apart antennas.

36. The data communication system according to claim 35 further comprising means for scaling a midamble signal to generate a derived version of the midamble signal.

37. The data communication system according to claim 35 further comprising means for phase shifting a midamble signal to generate a derived version of the midamble signal.

38. The data communication system according to claim 35 further comprising means for scaling and phase shifting a midamble signal to generate a derived version of the midamble signal.

39. The data communication system according to claim 35 further comprising at least one mobile terminal configured to receive and demodulate a time division duplex communication signal from the base station.

40. The data communication system according to claim 39 wherein the at least one mobile terminal comprises a joint detector.

41. The data communication system according to claim 39 wherein the at least one mobile terminal comprises a zero-forcing block linear equalizer.

42. The data communication system according to claim 39 wherein the at least one mobile terminal comprises a zero-forcing block linear equalizer having decision feedback capability.

43. The data communication system according to claim 39 wherein the at least one mobile terminal comprises a minimum-mean-square error equalizer.

44. The data communication system according to claim 39 wherein the at least one mobile terminal comprises a minimum-mean-square error equalizer having decision feedback capability.

45. The data communication system according to claim 39 wherein the at least one mobile terminal is further configured to receive and demodulate a code division multiple access communication signal from the base station.

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46. A data communication system comprising:

a base station configured to communicate with the at least one mobile terminal, the base station having a plurality of spaced apart antennas and further having:

a data processor;

a data input device in communication with the data processor;

an algorithmic software directing the data processor; and

a data storage unit, wherein discrete signal uplink data associated with at least one mobile terminal in communication with the base station is stored and supplied to the data processor such that the data processor, directed by the algorithmic software, can automatically derive midamble signal parameters using algorithmically defined relationships associated with the discrete signal uplink data such that derived midamble signals communicated between the base unit and each respective antenna will be characterized by at least one distinct signal parameter selected from the group consisting of signal delay, signal phase and signal amplitude.

47. The data communication system according to claim 46 further comprising at least one mobile terminal.

48. The data communication system according to claim 47 wherein the at least one mobile terminal comprises a joint detector configured to demodulate a time division duplex signal generated by the base station.

49. The data communication system according to claim 48 wherein the joint detector comprises a zero-forcing block linear equalizer.

50. The data communication system according to claim 48 wherein the joint detector comprises a zero-forcing block linear equalizer having decision feedback capability.

51. The data communication system according to claim 48 wherein the joint detector comprises a minimum-mean-square error equalizer.

52. The data communication system according to claim 48 wherein the joint detector comprises a minimum-mean-square error equalizer having decision feedback capability.

53. The data communication system according to claim 46 wherein the data processor is further directed by the algorithmic software such that it can automatically determine signal path profile parameters using algorithmically defined relationships associated with the discrete signal uplink data such that a signal communicated between the base unit and each antenna will be re-characterized by a new distinct signal characteristic if and when the discrete signal uplink data received by the base unit are sufficiently changed to require that a distinct signal delay change by at least one chip from an existing distinct signal delay.

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~~54. A time-division duplex (TDD) data communication system in which system users communicate information signals through a base station using TDD communication signals, the base station having an antenna system comprising:~~

~~a plurality of spaced apart antennas;~~

~~signal distribution means for coupling TDD communication signals between a base station and the plurality of spaced apart antennas; and~~

~~variable delay means operatively coupled to the plurality of spaced apart antennas and the signal distribution means for providing derived delays associated with the TDD communication signals and the plurality of spaced apart antennas.~~

~~55. The time-division duplex (TDD) data communication system according to claim 54 further comprising at least one mobile terminal having a joint detector configured to demodulate a delayed TDD mode communication signal received from a base station.~~

56. The time-division duplex (TDD) data communication system according to claim 55 wherein the joint detector is a zero-forcing block linear equalizer.

57. The time-division duplex (TDD) data communication system according to claim 55 wherein the joint detector is a zero-forcing block linear equalizer having decision feedback capability.

58. The time-division duplex (TDD) data communication system according to claim 55 wherein the joint detector is a minimum-mean-square error equalizer.

59. The time-division duplex (TDD) data communication system according to claim 55 wherein the joint detector is a minimum-mean-square error equalizer having decision feedback capability.

60. The time-division duplex (TDD) data communication system according to claim 54 wherein the variable delay means comprises:

a data processor;

an algorithmic software directing the data processor; and

a data storage unit, wherein discrete signal uplink data associated with at least one mobile terminal in communication with the base station is stored and supplied to the data processor such that the data processor, directed by the algorithmic software, can automatically determine signal path profile parameters using algorithmically defined relationships associated with the discrete signal uplink data such that a signal communicated between the base unit and each antenna will be characterized by a signal delay distinct to each antenna.

61. The time-division duplex (TDD) data communication system according to claim 60 wherein the algorithmic software is configured to further direct the data processor such that the data processor can determine new signal path profile parameters to re-characterize the signal delay distinct to each antenna when the discrete signal uplink data received by the base unit are sufficiently changed to require that a distinct signal delay change by at least one chip from an existing distinct signal delay.

62. The time-division duplex (TDD) data communication system according to claim 54 wherein the TDD signal is associated with a code division multiple access data signal.